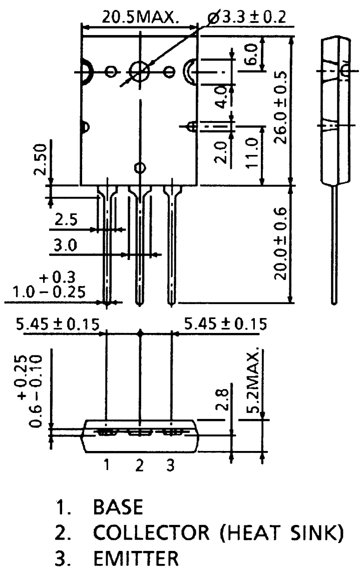
TOSHIBA Transistor Silicon PNP Triple Diffused Type

2SA1943

Power Amplifier Applications

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-21F1A

Weight: 9.75 g (typ.)

- High collector voltage: V_{CEO} = −230 V (min)
- Complementary to 2SC5200
- Recommended for 100-W high-fidelity audio frequency amplifier output stage.

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	−230	V
Collector-emitter voltage	V_{CEO}	−230	V
Emitter-base voltage	V_{EBO}	−5	V
Collector current	I_C	−15	A
Base current	I_B	−1.5	A
Collector power dissipation (Tc = 25°C)	P_C	150	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55 to 150	°C

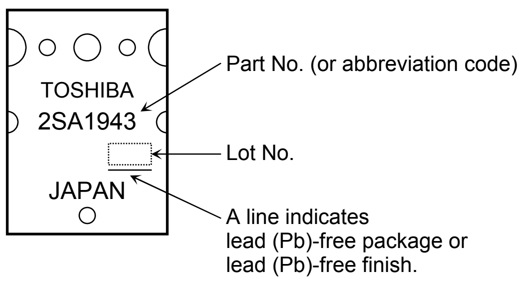
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Electrical Characteristics (Ta = 25°C)

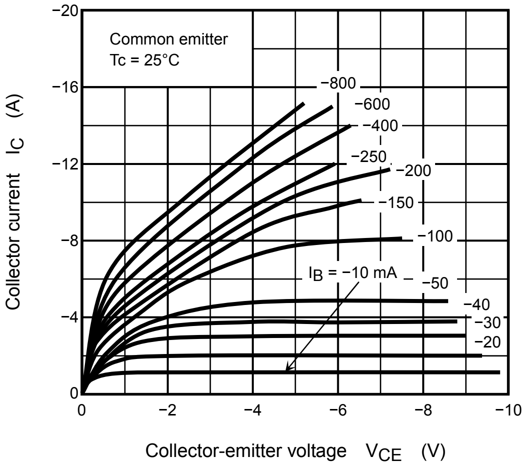
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = −230 V, I_E = 0	—	—	−5.0	μA
Emitter cut-off current	I_{EBO}	V_{EB} = −5 V, I_C = 0	—	—	−5.0	μA
Collector-emitter breakdown voltage	$V_{(BR)\,CEO}$	I_C = −50 mA, I_B = 0	−230	—	—	V
DC current gain	$h_{FE\,(1)}$ (Note)	V_{CE} = −5 V, I_C = −1 A	55	—	160	
	$h_{FE\,(2)}$	V_{CE} = −5 V, I_C = −7 A	35	60	—	
Collector-emitter saturation voltage	$V_{CE\,(sat)}$	I_C = −8 A, I_B = −0.8 A	—	−1.5	−3.0	V
Base-emitter voltage	V_{BE}	V_{CE} = −5 V, I_C = −7 A	—	−1.0	−1.5	V
Transition frequency	f_T	V_{CE} = −5 V, I_C = −1 A	—	30	—	MHz
Collector output capacitance	C_{ob}	V_{CB} = −10 V, I_E = 0, f = 1 MHz	—	360	—	pF

Note: $h_{FE\,(1)}$ classification R: 55 to 110, O: 80 to 160

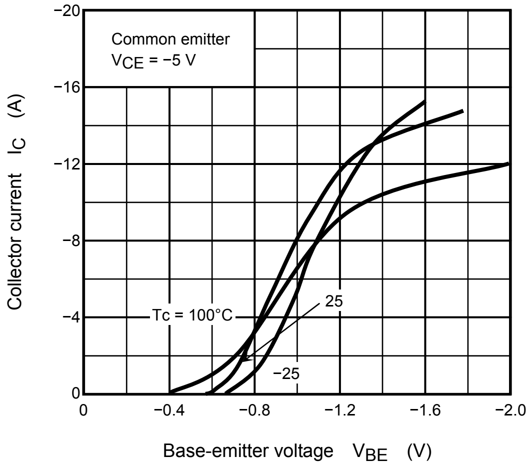
Marking



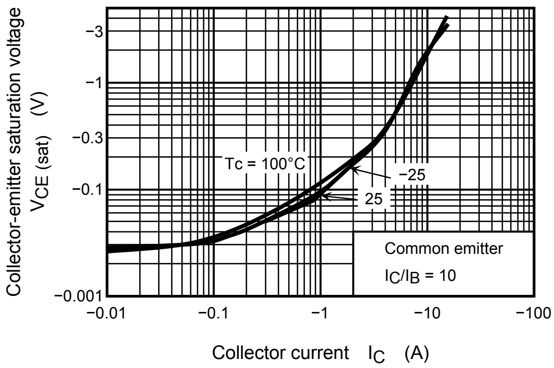
$I_C – V_{CE}$



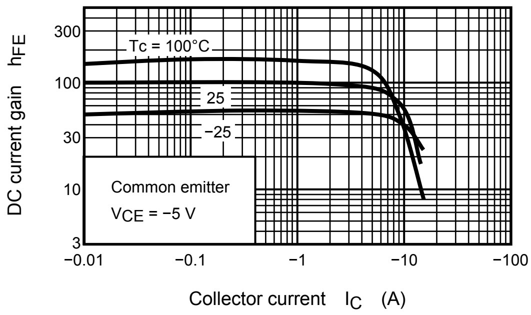
$I_C – V_{BE}$



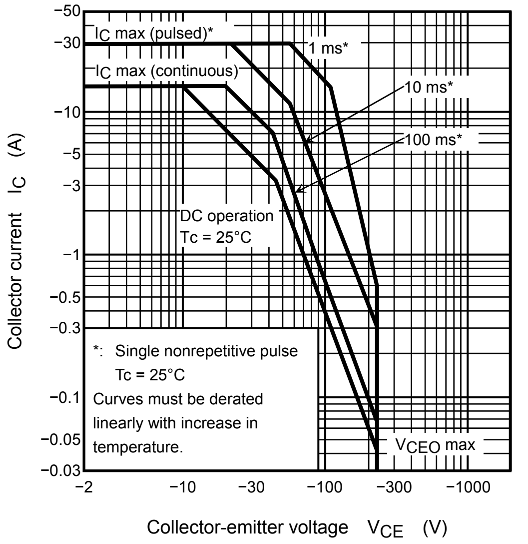
$V_{CE\ (sat)} – I_C$

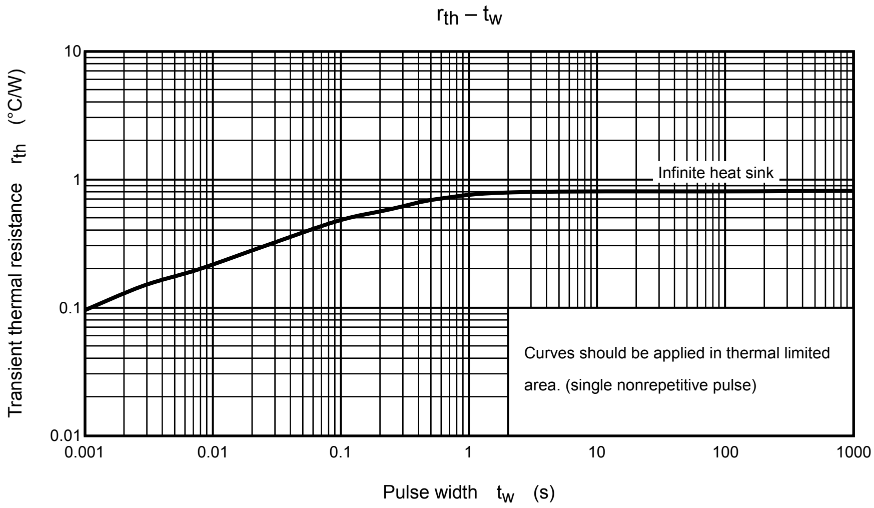


$h_{FE} – I_C$



Safe Operating Area




r_{th} – t_w
Transient thermal resistance r_{th} (°C/W)
10
1
0.1
0.01
Infinite heat sink
Curves should be applied in thermal limited area. (single nonrepetitive pulse)
0.001
0.01
0.1
1
10
100
1000
Pulse width t_w (s)

RESTRICTIONS ON PRODUCT USE

20070701-EN

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